

REMARKS

Reconsideration is requested.

Claims 1-36, 40, 41, 52 and 66 have been canceled. Claims 73-76 have been added. Claims 73-76 find support throughout the specification and unamended claims 36, 44 and 47. Claims 37-39, 43-51, 53-65 and 67-76 are pending.

The objections to claims 44 and 46 is obviated by the above amendments. Withdrawal of the objections is requested.

The Section 112, second paragraph, rejection of claims 38, 41 and 44-47 is obviated by the above amendments. The Examiner is requested to advise the undersigned in the event anything further is required in this regard. Withdrawal of the rejection is requested.

The Section 102 rejection of claims 37-50 over Qiu (US 2003/0143335) is traversed. Reconsideration and withdrawal of the rejection are requested in view of the following distinguishing remarks.

The presently claimed invention describes a method for preparing cross-linked polyelectrolyte multilayers films. The cited reference fails to literally or inherently describe a method of the claimed invention.

Qiu describes a method for modifying the surface of an article by depositing a polyelectrolytic tie layer onto the surface of said article. The example K (TiO_2) of the cited application) describes the deposition of a polyelectrolytic layer onto the surface of contact lenses, the layer being obtained by reaction between polyacrylic acid (PAA) and polyalkylamine hydrochloride (PAH), with ED and NHS. The method described in this

example comprises the steps of successively dipping lenses into solutions of PAA and PAH, and then dipping the lenses in a solution comprising EDC and NHS.

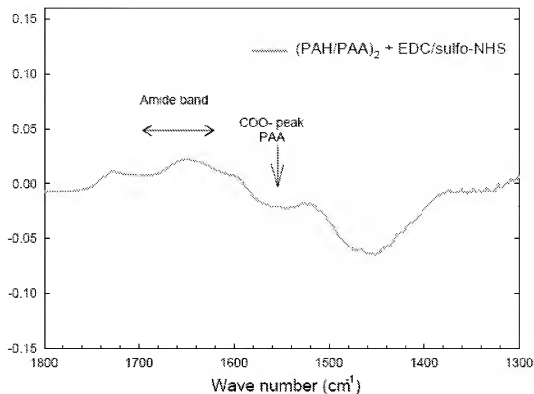
The obtained polyelectrolytic film of the cited art only contains however one layer pair of cationic polyelectrolytes (PAH) and anionic polyelectrolytes (PAA). Furthermore, the cited art fails to indicate whether the obtained polyelectrolytic film is crosslinked.

While not believed to be required, because for example the cited application only contains one layer pair of cationic and anionic polyelectrolytes, the applicants have demonstrated, as described herein, that the film according to example K of the cited art is not crosslinked.

Specifically, as a measurement of any cross-linking on the film of the cited art, (PAH/PAA)₂ films were first deposited as described by the cited art (films built in water with PAH at pH 7.5 and PAA at pH 3.5; see example K, ¶[0400] and description of polyelectrolyte solutions page 20, ¶[0352]-[0353]). These films were then contacted with the EDC and sulfo-NHS solution. Film growth and cross-linking was followed by Fourier transform spectroscopy (FTIR) in the attenuated total reflection (ATR) mode as described in the present patent application.

The growth and cross-linking of the film described by the cited art was evaluated and the following graph of figure 1 shows the difference between FTIR spectra obtained after contact of the film with the EDC/sulfo-NHS solution and before contact (Figure 1).

Absorbance (a.u)



Specifically, Figure 1 is a spectra taken before and after cross-linking of the (PAH/PAA)₂ film according to example K of the cited art.

For the (PAA/PAH)₂, the decrease of the COO⁻ peak of PAA is barely visible. Furthermore, the increase in the amide band is very minor. A quantitative analysis of the COO⁻ peak of PAA (at 1566 cm⁻¹) showed a decrease of COO⁻ peak of PAA to be only of 6.5%. The (PAA/PAH)₂ film of the cited art exhibited only a very minor change in structure and from the FTIR data one of ordinary skill would conclude that the films of the cited art have not been cross-linked.

The cited art fails to teach each and every aspect of the claimed invention.

Withdrawal of the Section 102 rejection is requested.

The Section 103 rejection of claim 53 over Qiu and Lennon (U.S. Patent No. 5,721,361) is traversed. Reconsideration and withdrawal of the rejection are requested as the secondary reference fails to cure the deficiencies of the primary reference noted above. Claim 53 is dependent from claim 37 and is patentable over the cited primary reference for reasons similar to those noted above with regard to the Section 102 rejection.

Moreover, the applicants submit that as a consequence of the cross-linking provided by the claimed invention, the obtained films are stabilized with respect to aggressive media, such as solvents, extreme pH, ionic strengths fluctuations, enzymes and/or phagocytic cells, and particularly the films have an increased resistance against a certain medium and exchange of this medium against another one (pH fluctuation, change of solvent, etc). This stability is demonstrated in the present specification.

Qiu neither discloses nor suggests a polyelectrolytic film having these properties or method of the claimed invention. Qiu describes a method of modifying the surface of a substrate with a polyelectrolytic film which allows active agents to adhere to the surface of the substrate. Similarly, Lennon describes a method for preparing substituted polyazamacrocyles by reacting a diamine compound with a dicarboxylic acid or ester thereof. Lennon neither describes nor suggests a crosslinked polyelectrolytic film comprising 5 to 60 layer pairs of cationic polyelectrolytes and anionic polyelectrolytes. Furthermore, Lennon neither teaches nor suggests a polyelectrolytic film having properties of the films of the present disclosure.

PICART et al.
Appl. No. 10/580,544
Atty. Ref.: 3608-8
Amendment
April 5, 2011

The claimed invention would not have been obvious in view of the cited art.

Withdrawal of the Section 103 rejection is requested.

The claims are submitted to be in condition for allowance and a Notice to that effect is requested. The Examiner is requested to contact the undersigned, preferably by telephone, in the event anything further is required in this regard.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: /B. J. Sadoff/
 B. J. Sadoff
 Reg. No. 36,663

BJS:
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100